Volunteer Lake Assessment Program Individual Lake Reports
WAUKEENA LAKE, DANBURY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	282	Max. Depth (m):	6.1	Flushing Rate (yr[1])	2.5
Surface Area (Ac.):	53	Mean Depth (m):	1.2	P Retention Coef:	0.74
Shore Length (m):	2,400	Volume (m³):	276,500	Elevation (ft):	1116

TROPHIC CLASSIFICATION

| Year	Trophic class
1983	MESOTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.
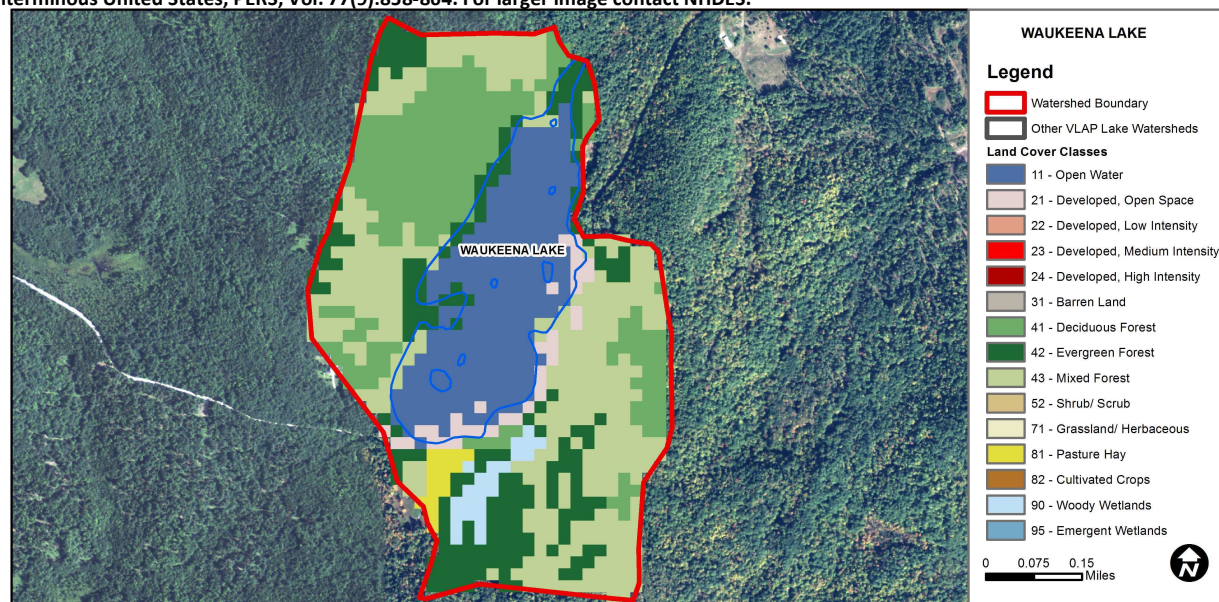
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	21	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	3.33	Deciduous Forest	21.05	Pasture Hay	1.43
Developed-Low Intensity	0	Evergreen Forest	18.19	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	32.96	Woody Wetlands	2.29
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic*)

- **CHLOROPHYLL-A:** Chlorophyll levels have decreased steadily since 2008, and were below the NH lake median in 2012. Historical trend analysis indicates chlorophyll levels tend to fluctuate from year to year.
- **CONDUCTIVITY/CHLORIDE:** Conductivity levels were low and below the NH lake median.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low, decreased from 2011, and were below the NH lake median. Historical trend analysis indicates a relatively stable epilimnetic (upper water layer) phosphorus level since monitoring began. Boat Launch and Outlet phosphorus levels were also low.
- **TRANSPARENCY:** Transparency improved slightly from 2011. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- **TURBIDITY:** Turbidity was low at all stations.
- **pH:** Hypolimnetic pH levels were lower than desirable and potentially critical to aquatic life.
- **RECOMMENDED ACTIONS:** Increase monitoring frequency to three times per summer to better assess shifts in summer water quality and historical trends. Water quality improved in 2012 and could be a result of dry weather conditions and lack of stormwater runoff. Educate watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management".

Dissolved Oxygen & Temperature Profile
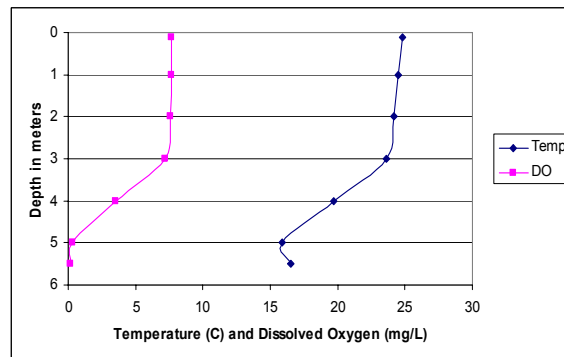
Station Name	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Boat Launch			23.0	6			0.72	6.72
Deep Epilimnion	4.4	2.93	26.9	6	3.06	3.40	0.92	6.59
Deep Hypolimnion			25.3	11			0.87	5.99
Outlet			22.0	6			0.74	6.67

Table 1. 2012 Average Water Quality Data for WAUKEENA LAKE

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Stable	Data not significantly increasing or decreasing.

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
Sara Steiner
PO Box 95
Concord, NH 03302-0095
(603) 271-2658
sara.steiner@des.nh.gov